

Orchids of Nepal-9¹

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(With five text figures)

The genera that are placed under Ophryoideae are treated in this instalment. The tribes had been divided into two by Schlechter, while Schultes and Pease divide them into seven sub-tribes. The arrangement of the genera is alphabetical.

ARTIFICIAL KEY TO THE GENERA

- A Lip not spurred, concave at base..... *Herminium* (Habenarieae)
- AA Lip spurred—
 - B Stem bearing a single leaf..... *Hemipilia* (Platanthereae)
 - BB Stem leafy, atleast at the base—
 - C Spurs two..... *Satyrium* (Satyrieae)
 - CC Spur one—
 - D Stigmatic surface flat, almost confluent..... *Platanthera* (Platanthereae)
 - DD Stigmatic surface not flat, but separated as swellings or stand out as appendages..... *Habenaria* (Habenarieae)

Habenaria Willd.

One of the largest genera of Orchids. Terrestrial plants, usually growing from tubers, rarely from a short rhizome; stem simple and erect; bearing few to many basal and cauline leaves which are thin, usually broad, and sheathing at the base. Inflorescence is terminal, usually fairly long of many small or large flowers, dorsal sepal and petals usually form a hood over the column; lateral sepals usually spreading or reflexed; lip spurred and the blade variously shaped, simple, 3 lobed or 3 partite; column short consisting mainly of anther, usually with a small auricle on either side; pollinia 2, separate, clavate or pyriform, the caudicle enclosed in long or short often prominent tubes and separated more or less widely by the rostellum. Stigmas 2, usually separated, convex or on elongated processes on either side of the base of the column, often joined to the base of the lip and auricles, while in some others flat and joined below the rostellum.

There is considerable variation in the details of the structure of the column, especially as regards the stigmas, and some authors have adopted a division of the genus on the basis of the structure of the stigma. Thus, J. J. Smith (1905) divides *Habenaria* into three genera—*Platan-*

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thera, *Peristylus* and *Habenaria* proper; Schlechter (1926) recognises only two divisions—*Peristylus* and *Habenaria*. According to Holttum (1953) though such divisions may appear distinct in a limited number of species, they are said not to be sharply separable when all the known species are considered. Summerhayes (1951) split the group into distinct genera. Santapau & Kapadia (1960) regard *Platanthera* and *Peristylus* as genera which are independent from *Habenaria*. In the words of Schultes & Pease (1963) “some prefer as in the case of *Habenaria*, to recognise large and inclusive generic concepts, while others more readily separate sections as good genera. There is here no question of right or wrong, but one of personal evaluation.” According to Hawkes (1965), *Gymnadenia* is often included in *Habenaria* Willd., and *Peristylus* is in actuality closer in relationship to *Herminium* R. Br. Quoting Schweinfurth (1959) “for instance *Leucorchis* E. Mey., *Gymnadenia* L. C. Rich., *Coeloglossum* Hart., *Platanthera* L. C. Rich., *Blephariglottis* Raf. and *Perularia* Lindl. should be regarded, we believe, as referable to the exceedingly polymorphic genus *Habenaria* Willd. as also *Pectelis* Raf., *Gymnadeniopsis* Rydb., and doubtless others”. We have treated *Platanthera* as distinct from *Habenaria* on grounds of the character of the stigmatic surface.

Platanthera is a name given to those species which have a flat stigmatic surface, usually continuous but sometimes slightly divided beneath the rostellum, very much like the stigma of most orchids. The other divisions of *Habenaria* all have two separate stigmas, which are convex or more or less elongated often club-shaped. If the stigmas are convex and entirely united to the base of the lip and to the auricles of the column, we have the *Peristylus* condition; if the stigmas are long and cylindric or club-shaped, we have *Habenaria* proper. In *Habenaria* proper, the stigmas are often quite long and prominent, they are usually below and shorter than the tubes containing the caudicles of the pollinia.

ARTIFICIAL KEY TO THE SPECIES OF *Habenaria*¹

- A Lateral sepals spreading, deflexed or reflexed—
 - B Lip 3-partite almost to the base into 3 narrow lobes—
 - C Sepals with filiform tips, spur equalling the ovary..... *stenopetala*
 - CC Sepals obtuse, spur shorter than the ovary..... *aitchisoni*
 - BB Lip 3-lobed and spurred—
 - C' Side lobes lacerate to the middle, midlobe linear—
 - D Spur rather longer than the ovary—
 - E Petals pubescent, broader than the dorsal sepal.....
 - *arietina*
 - EE Petals glabrous, linear, narrower than the dorsal sepal
 - *pectinata*

¹*Habenaria arcuata* Lindl. has been recorded from Phulchowki (Nepal) by Hara (1971).

- DD Spur twice as long as the ovary..... *intermedia*
 C'C' Sidelobes fimbriate, hardly longer than the lateral sepals –
 D' Spur twice as long as the ovary..... *conopsea*
 D'D' Spur longer than the ovary..... *dentata*
 C'C'C' Sidelobes much longer than the lateral sepals –
 D'' Spike lax flowered; lip flabelliform, sidelobes entire or toothed
 *plantaginea*
 D''D'' Spike dense flowered; lip very large, sidelobes hatchet-shaped,
 crenulate *triflora*
 C'C'C'C' Sidelobes very narrow, filiform, horizontal, spur much shorter
 than the ovary *aristata*
 BBB Lip 3 lobed, spur almost absent or saccate; spike densely flowered,
 flowers small *fallax*
 BBBB Lip entire –
 E Spur shorter than the ovary *densa*
 EE Spur longer than the ovary, upturned..... *latilabris*
 AA Lateral sepals erect or ascending, parallel to the dorsal petal, rarely at
 length spreading or deflexed –
 B' Lip usually 3-fid or 3-partite; flowers usually small –
 F Spur longer than the sepals, incurved..... *bicornuta*
 FF Spur shorter than the sepals –
 G Stem more than 60 cm long, leaves petioled..... *constricta*
 GG Stem less than 60 cm long; leaves hardly petioled.....
 *goodyeroides*
 B'B' Lip entire –
 H Flowers large *c* 1.2 cm across; lip shortly clawed, spur short,
 conical *galeandra*
 HH Flowers small *c* 0.8 cm across; lip recurved, terminal half solid
 and terete, spur inflated..... *urceolata*
 HHH Flowers large *c* 1.25 cm across; lip lanceolate, 3-nerved entire;
 spur slender, curving and longer than the straight ovary.....
 *stenantha*

Habenaria aitchisoni Reichb. f. in Trans. Linn. Soc. Bot. 3:113, 1886; F. B. I. 6:152, 1890; King & Pantl. 311, t. 408, 1898; Kitamura, 102, 1955.

Flowers greenish, fragrant, *c* 1.2 cm in diam., bracts linear-lanceolate, shorter than the ovary; sepals subequal, oblong-ovate, obtuse, 3-nerved, lateral sepals spreading, dorsal erect, petals as long as the sepals, ovate-lanceolate, 1 nerved. Lip straight, as the sepals, 3-partite above the base, side segments longest, spreading and recurved, mid segment straight, spur shorter than the curved ovary, *c* 6 mm long and curved forwards. Flowering time from July to August. Collected from Bankukhola at 3500 m. Authority Kitamura.

H. arietina Hk. f. in Fl. Brit. Ind. 6: 138, 1890; King & Pantl. 311, t. 407, 1898. *H. pectinata* Lindl. Gen. et Spec. Orch. 341, 1830. [non *H. pectinata* (Sm.) Don]

Flowers white or light greenish, fragrant, *c* 5 cm in diam., sepals gibbously dilated on the outer margin; petals broader than the sepals, pubescent. Lip lobed only for about $\frac{3}{4}$ of its length, sidelobes pectinate

but with fewer teeth, midlobe shorter than the sidelobes, linear, spur much longer than the ovary, 2.5-3 cm long, tip swollen. Flowering during July and August. Collected from Sheopuri, Bagdoar, Sundarijal-Manichur area. Distributed between 1800-2100 m. This species is very similar to *H. pectinata* (Sm.) Don, in habit and appearance but the pectinate lip is different.

H. aristata Hk. f. in Fl. Brit. Ind. 6: 158, 1890; King & Pantl. 312, t. 409, 1898.

Flowers green, *c* 1.5 cm in diam., sepals subequal, linear, lateral sepals turned upwards and spreading, petals conniving with the dorsal sepal to form a hood, ovate-lanceolate, base oblique. Lip slightly longer than the sepals, hastately tripartite, sidelobes filiform and horizontally spreading, midlobe linear and shorter than the sidelobes, spur much shorter than the ovary, curved. Flowering time during July and August. Collected from Bagdoar at *c* 2290 m.

H. bicornuta Hk. f. in Fl. Brit. Ind. 6: 156, 1890; Hara, 437, 1966. *Peristylus richardianus* Wight, Icon. t. 1097, 1851.

Spike dense flowered, flowers *c* 10-12 mm across, dorsal sepal oblong, faintly 5 nerved, lateral sepals linear, obtuse spreading, petals as long as the lateral sepals, elliptic, 1 nerved. Lip tripartite, segments filiform, side lobes longer than the sepals, recurved, midlobe shorter and straight, spur clavate, incurved. Collected from Phulchowki.

H. conopsea Benth. in Journ. Linn. Soc. 18: 345, 1880; Butcher, A new Ill. Brit. Fl. pt. 2, 740, 1961. *Gymnadenia conopsea* R. Br. in Ait. Hort. Kew, ed. 2, 5: 191, 1813; Kitamura, 102, 1955.

Spike rather long and dense flowered, flowers 10 mm across, fragrant, sepals reddish-lilac, lateral sepals spreading, petals linear-lanceolate, slightly united with the dorsal sepal. Lip red with 3 equal rounded lobes, spur filiform, twice as long as the ovary. Authority Kitamura.

H. constricta Hk. f. in Fl. Brit. Ind. 6: 161, 1890; King & Pantl. 325, t. 429, 1898.

Flowers greenish, white, bracts lanceolate, equal to or longer than the ovary; lateral sepals linear-lanceolate, dorsal sepal lanceolate, petals longer, ovate-oblong, gibbous on the lower side. Lip rather longer than the sepals, 3-fid to the middle, sidelobes slender, longer than the midlobe, sometimes variable in size, spur broadly globular and very short, claw hardly any. Flowering during July and August. Collected from Nagarjung. Distributed at 1500 to 1600 m.

H. densa Wall. ex Lindl. Gen. et Spec. Orch. 326, 1835; F. B. I. 6: 153, 1890; King & Pantl. 319, t. 420, 1898; Kitamura, 103, 1955; Hara 437, 1966.

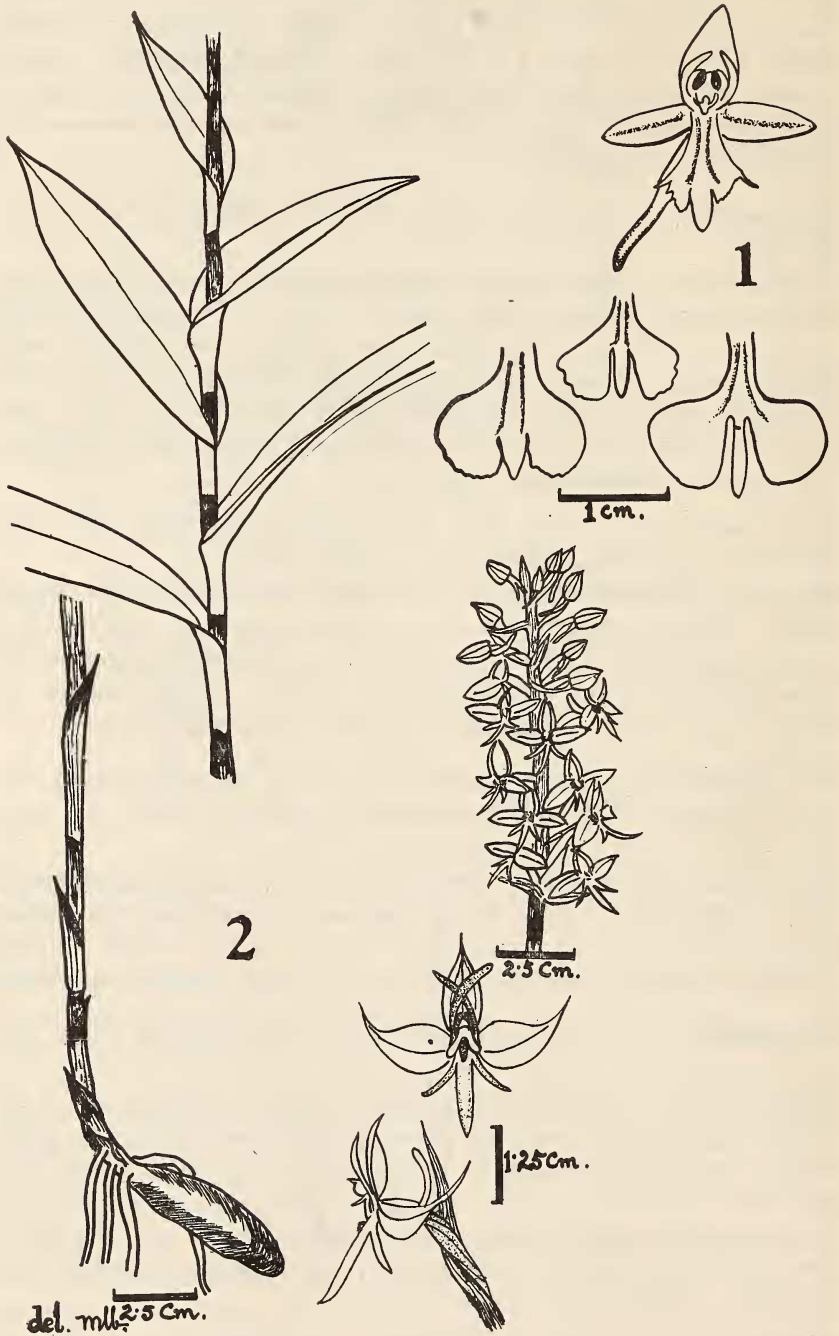


Fig. 1. Flower and lips of *Habenaria dentata* (Sw.) Schltr. Fig. 2. *Habenaria stenopetala* Lindl.

Flowers small, 4 mm across, erect, bracts ciliolate and longer than the ovary; sepals obtuse, thick, 3 nerved, puberulous, petals nearly as long, obliquely ovate or narrower, obtuse, fleshy, yellowish-green. Lip linear, obtuse, as long as the sepals, spur half as long as the ovary. Flowering time July and August. Collected from Chandragiri, Lamjura.

H. dentata (Sw.) Schltr. Orch. Sino-JaP. 125, 1919; Kitamura, 103, 1955; Hara 437, 1966. *Orchis dentata* Swartz. in Ved. Acad. Handl. Stockh. 207, 1800. *Platanthera dentata* (Sw.) Lindl. Gen. et Spec. Orch. 296, 1835. *Habenaria geniculata* D. Don, Prodr. Fl. Nep. 25, 1825; F. B. I. 6: 136, 1890; King & Pantl. 309, t. 405, 1898, (Fig. 1). Spike dense, flowers dull greenish, c. 2.5 cm across, lateral sepals acute, petals linear-oblong. Lip suborbicular, sidelobes cuneate or rounded, fimbriate or crenate, midlobe small, much shorter, oblong, spur subclavate, longer than the ovary. Flowering during July and August. Collected from Nagarjung. Distributed at 1525 to 1675 m. In F. B. I. the colour of the flowers is given as white, but we have not seen any specimen with white flowers.

H. fallax (Lindl.) King & Pantl. in Ann. Roy. Bot. Gard. Cal. 8:325, t. 428, 1898; Kitamura, 103, 1955. *Herminium fallax* Lindl. in Wall. Cat. (Nomen nudum); F.B.I. 6:129, 1890. *Peristylus fallax* Lindl. Gen. et Spec. Orch. 298, 1835.

Leaf solitary; spike lax flowered, flowers green, bracts equalling the ovary, sepals spreading, oblong or ovate-lanceolate, 1 nerved, broader than the petals, petals erect, falcate. Lip shorter than the sepals, hastately 3 lobed, side lobes slightly diverging, midlobe longer than the sidelobes, spur saccate, tip inflated. Flowering during July and August. Collected from Sheopuri, Tarebhir, Lamjura. Distributed from 1650 to 2850 m.

H. galeandra (Reichb. f.) Benth. Fl. Hongk. 363, 1861; F.B.I. 6:163, 1890. *Platanthera galendra* Reichb. f. in Linnaea, 25:226, 1852.

Spike 5-8 cm long, flowers pale purple, c. 1 cm across, dorsal sepal ovate or narrowly lanceolate, lateral sepals falcately lanceolate, spreading, petals rather shorter and narrower than the sepals, obtuse. Lip broadly obovate or obcordate, sidelobes recurved, spur short, conical saccate. Flowering during June to August. Collected from Sheopuri at c. 1825 m.

H. goodyeroides D. Don, Prodr. Fl. Nep. 25, 1825; F.B.I. 6:161, 1890; King & Pantl. 326, t. 430, 1898; Holtum 86, 1953. *Peristylus goodyeroides* (Don) Lindl. Gen. et Spec. Orch. 299, 1835; Sant. & Kapad. in Journ. Bom. nat. Hist. Soc. 57(1):133, 1960.

Spike 15 to 20 cm long, flowers small, c. 8-10 mm across, yellowish-green, crowded, bracts narrowly lanceolate, sepals green turning reddish

with age, dorsal sepal 6 mm long, ovate oblong, lateral sepals a bit longer, obliquely obovate-oblong, obtuse, petals gibbously ovate, spreading, creamy or greenish-white. Lip as long as the sepals, trilobed at the anterior part, recurved, sidelobes linear-oblong, longer than the midlobe and diverging, midlobe broad, and tapering to blunt apex, spur minute, fusiform. Flowering during July. Collected from Chainpur to Mialay at c 1825 m, locality unrecorded (Banerji).

H. intermedia D. Don, Prodr. Fl. Nep. 24, 1825; F.B.I. 6:38, 1890.

Flowers few and distant, very large c 5 cm across, white or greenish-white, dorsal sepal recurved, white inside, lateral sepals falcately lanceolate, tips reflexed, narrower than the petals, acuminate, 5 nerved, petals falcate, obovate, strongly 5 nerved, glabrous. Lip longer than the sepals, 3 lobed to about 2/3rd of its length, green or yellowish-green, base narrow and white, sidelobes deeply fringed, midlobe entire, as long as the sidelobes, spur twice as long as the ovary, c 3 cm, very stout and swollen towards the tip. Flowering during August. Collected from Gumuraung to Sarti at 2300 m. Authority Kitamura.

H. latilabris (Lindl.) Hk. f. in Fl. Brit. Ind. 6:153, 1890; King & Pantl. 321, t. 423, 1898; Hara, 438, 1966. *Platanthera latilabris* Lindl. Gen. et Spec. Orch. 289, 1835. *P. acuminata* Lindl. loc. cit. 289, 1835.

Spike lax, flowers green, 8-14 mm across, bracts lanceolate longer than the ovary, sepals ciliolate, 3-5 nerved, dorsal sepal broadest, orbicular, lateral sepals ovate, deflexed, petals as long as the lateral sepals, broadly ovate, fleshy, base slightly gibbous. Lip linear, spur stout and upturned, longer than the ovary. Flowering during August. Collected from Bagdoar.

H. pectinata (Sm.) D. Don, Prodr. Fl. Nep. 24, 1825; F.B.I. 6:137, 1890; King & Pantl. 310, t. 406, 1898. *Orchis pectinata* Smith, Exot. Bot. 2:77, 1805. *Habenaria ensifolia* Lindl. Gen. et Spec. Orch. 321, 1835.

Spike may be as long as 20 cm, flowers large c. 4.0 cm across, white or greenish-white, crowded, dorsal sepal lanceolate, erect, lateral sepals ovate-lanceolate, petals linear-falcate, narrower than the sepals, obtuse, 3-5 nerved, glabrous. Lip as long as the sepals, 3 lobed nearly to the base, sidelobes deeply fringed, comb-like, midlobe linear, longer than the sidelobes, spur as long as the ovary, 2.5-3 cm long, geniculate, swollen at the tip. Flowering during August. Collected from Bagdoar, Lokwa (Kitamura). Distributed at about 2300 m.

H. plantaginea Lindl. Gen. et Spec. Orch. 323, 1835; F.B.I. 6:141, 1890.

Spike 5-7.5 cm long, flowers white, sepals small, subequal, acute, 3 nerved, dorsal sepal ovate-oblong, lateral sepals falcate, oblong, petals

linear-lanceolate. Lip broad, twice as long as the lateral sepals, flabelliform, sidelobes semi-ovate entire or faintly toothed, midlobe as long, linear, spur as long as the ovary, green. Flowering during September. Collected from Banepa to Dolaghat at 916 m.

H. stenantha Hk. f. in Fl. Brit. Ind. 6:153, 1890; King & Pantl. 314, t. 412, 1898.

Flowers green with lip yellowish, c. 1.75-2.25 cm in diam., bracts linear-lanceolate, equalling the ovary in the lower flowers but shorter in the upper ones, sepals unequal, 3-nerved, dorsal sepal concave, broadly ovate, erect, lateral sepals small, ovate-elliptic, reflexed, petals longer than the dorsal sepal, erect, 1 nerved. Lip longer than the sepals, lanceolate, spur longer than the ovary, curved, slightly widening towards the tip. Flowering time during July and August. Collected from Junbesi to Taksindhu. This species closely resembles *H. latilabris* but differs in the shape of the petals which are erect and in the character of the bracts.

H. stenopetala Lindl. Gen. et Spec. Orch. 219, 1835; F.B.I. 6: 134, 1890; King & Pantl. 308, t. 404, 1898. (Fig. 2).

Flowers greenish-yellow, sepals oblong-lanceolate, membranous 3 nerved, tips filiform, segments of petals slender, equal or the lower shorter or even absent. Lip tripartite, lobes filiform, lateral lobes longer than the midlobe or as long as it, spur equalling the ovary. Flowering during August and September. Collected from Bagdoar, Sheopuri, Godavari, locality unknown (Herklotts). Distributed at c. 2430 m.

H. triflora D. Don, Prodr. Fl. Nep. 25, 1825; F.B.I. 6:142, 1890 (Fig. 3). Sepals suberect, dorsal sepal oblong-ovate, lateral sepals oblong-lanceolate, petals small, linear-subulate, 1 nerved. Lip very large, sidelobes semi-oblong, hatchet-shaped, crenulate, midlobe shorter, linear; spur very slender, as long as the ovary, slightly thickened at the tip. Flowering from July to early September. Collected from Bagdoar, Lamjura, locality unknown (Herklotts). Distributed at 1525 to 2135 m.

H. urceolata C.B.Cl. in Journ. Linn. Soc. 25:73, t. 30, 1889; F.B.I. 6: 165, 1890; King & Pantl. 316, t. 415, 1898.

Racemes 5-7.5 cm long, flowers white or rosy, sepals white or rosy, petals 1 nerved. Lip recurved, lanceolate, terminal half solid, acuminate, green, spur inflated and as long as the sepals. Flowering during August. Collected from Lamjura at 3650 m.

Hemipilia Lindl.

These are singularly attractive terrestrial orchids. The name probably alludes to the sparsely hirsute lip of the type species. Accord-

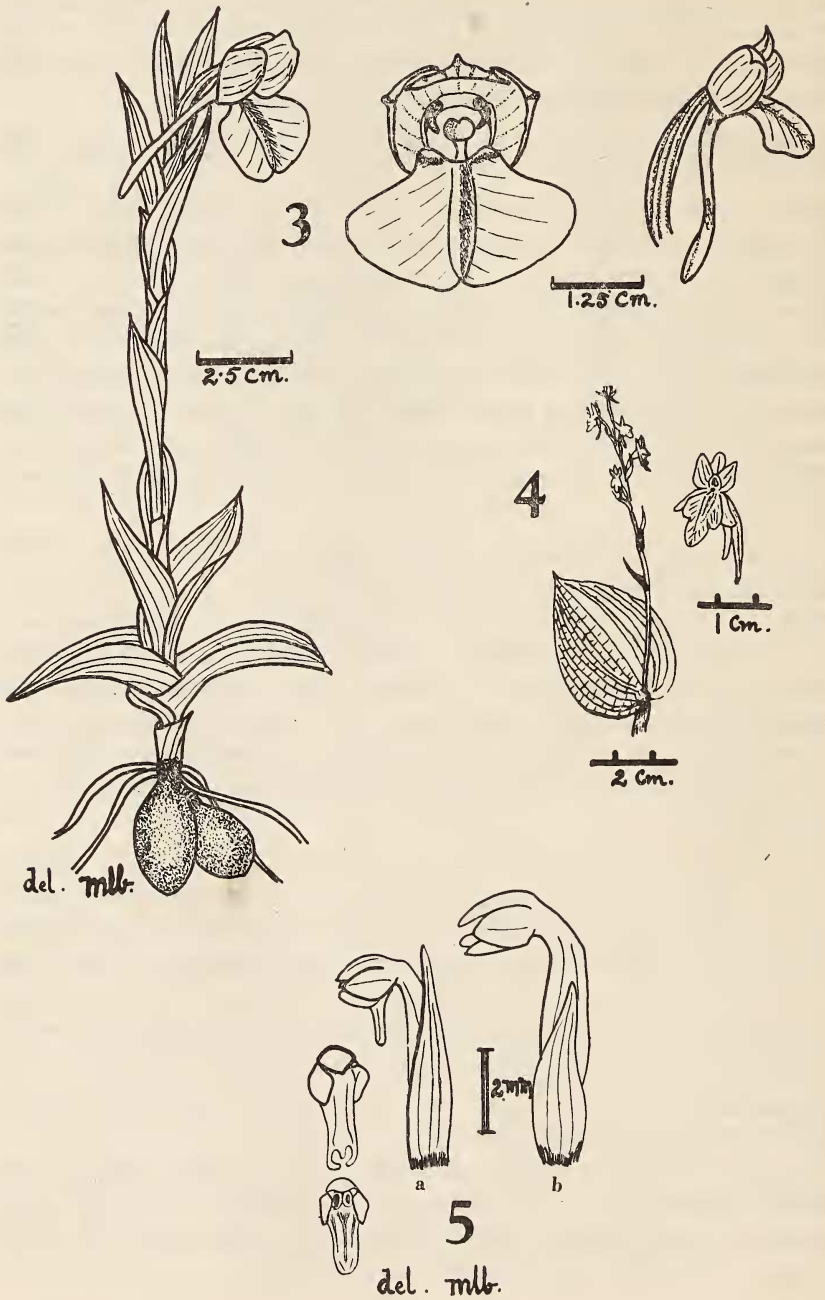


Fig. 3. *Habenaria triflora* D. Don. Fig. 4. *Hemipilia cordifolia* Lindl. Fig. 5. Flowers of *Herminium angustifolium* (Lindl.) Benth. a. normal flower; b. abnormal (peloric) flower.

ing to Hawkes, the flowers closely simulate, superficially atleast, some sort of *Habenaria*. However, they are terrestrial, tuberous herbs with a single broad radical leaf. The flowers are in lax racemes. The lip is obscurely 3 lobed, and the spur is trumpet-shaped.

Hemipilia cordifolia Lindl. Gen. et Spec. Orch. 296, 1835; F.B.I. 6: 167, 1890; Kitamura, 103, 1955. (Fig. 4).

Plants 16-20 cm high, bearing a single leaf at the base. Leaf 7-8 by 4.5-6.5 cm broadly ovate, fleshy. Racemes few to many flowered, flowers purple c 1.0-1.5 cm across. Bracts about half the length of the ovary, sepals equal in length, dorsal sepal oblong, obtuse, erect, lateral sepals spreading, falcate, oblong petals smaller than the sepals, erect, forming a hood, broadly ovate, entire. Lip obscurely trilobed, sidelobes rounded, midlobe broad, subcrenate, spur shorter than the ovary, curved, tip faintly 2-lobed upturned. Flowering during August and September. Collected from Tarebhir-Manichur area, Gurmurang (Kitamura). Distributed at 1825 m.

Herminium R. Br.

Herminium is a genus of mostly small flowered, rather insignificant terrestrial orchids. Although rare in cultivation these allies of *Habenaria* Willd. are attractive. Plants are small, erect, tuberous herbs with oblong tubers and with a solitary or few leaves. The *Herminia* can be distinguished from *Habenarias* by the characteristic lip, which is never with a spur but is provided with a saccate or gibbous base. Although it is mentioned by Hooker that the Indian *Herminia* attain the greatest elevation of any orchid, we have not collected any member from a high altitude.

ARTIFICIAL KEY TO THE SPECIES OF *Herminium*

Lip distinctly 3 lobed -

Lip deeply 3 lobed near the apex..... *angustifolium*

Lip 3 lobed near the base and very minute..... *jaffreyanum*

Lip quite entire (sidelobes very faint) -

Sides of lip dilated, lip longer than sepals, flowers c 3-4 mm in diam., green

Sides of lip not dilated, lip shorter than sepals, flowers c 2-3.5 mm in diam., yellowish

..... *monophyllum*

Herminium angustifolium (Lindl.) Benth. ex Hk. f. in Fl. Brit. Ind. 6:129, 1890; King & Pantl. 332, t. 434, 1898; Kitamura, 103, 1955; Hara, 439, 1966. *Aceras angustifolia* Lindl. Gen. et Spec. Orch. 282, 1835. (Fig. 5).

Spike 5-10 cm long, flowers decurrent, small, 1.5 cm in diam., sepals oblong, obtuse, dorsal sepal and petals forming a hood, petals linear,

very narrow, 1 nerved, acute, membraneous. Lip as long as the sepals, trifid beyond the middle, sidelobes filiform, curved, longer than the midlobe, midlobe very short. Flowering during July and August. Collected from Pheda to Charikot, Manichur, Sheopuri area, Aga (Kitamura). Distributed at 2050 to 2400 m.

H. congestum Lindl. Gen. et Spec. Orch. 305, 1835; F.B.I. 6:130, 1890; King & Pantl. 355, t. 440, 1898; Kitamura, 103, 1955.

Spike 3-7 cm long, dense flowered, flowers minute, *c* 3-4 mm in diam., decurved, sepals, obtuse, dorsal sepal broadly ovate to orbicular, lateral sepals oblong to broadly oblong, petals ovate, equalling the sepals, fleshy. Lip entire, ovate or triangular-ovate, fleshy, sides faintly dilated into lobes, base saccate. Authority Kitamura.

H. jaffreyanum King & Pantl. in Journ. Asiat. Soc. Beng. 65:130, 1895; et Orch. Sikkim Himal. 333, t. 436, 1898.

Spike 3.5-7.5 cm long, densely flowered, flowers 2-2.5 mm in diam., sepals broadly ovate-elliptic, concave, slightly spreading, petals narrowly oblong, obtuse, longer than the sepals. Lip 3 lobed near the base, side lobes very small and rounded, midlobe elongate with a blunt apex. Flowering during August and September. Collected from Charikot-Kalinchok area at 3200 m. This species can be distinguished from *H. angustifolium* on the characters of the lip and sepals. It also resembles *H. monophyllum* which has a single leaf, floral bracts are longer than the flowers, and the lip is entire.

H. monophyllum (D. Don) P. F. Hunt & Summerhayes in Kew Bull. 20(1):51, 1966. *Neottia monophyllum* D. Don, Prodr. Fl. Nep. 27, 1825. *Herminium gramineum* Lindl. Gen. et Spec. Orch. 305, 1835; F.B.I. 6:131, 1890.

Spike lax flowered, flowers minute *c.* 2-3.5 mm in diam., yellowish, suberect, dorsal sepal oblong or broadly ovate, lateral sepals ovate, obtuse, spreading, petals erect, linear, falcate, as long as the sepals, thick. Lip flat, ovate, acuminate, equalling or shorter than the sepals, base concave, saccate. Flowering during August. Collected from Chaudas to Risingo, Buludanda to Risingo, Tarebhir. Common at 1985 m

Platanthera L. C. Rich.

This is a group of terrestrial orchids which are sometimes included in *Habenaria* Willd. from which it is separated on technical data. The name refers to the unusual width of the anthers.

ARTIFICIAL KEY TO THE SPECIES OF *Platanthera*

- Lip pectinate, petals smaller than the sepals..... *susannae*
 Lip entire and blunt, petals equalling the sepals..... *bakeriana*

Platanthera bakeriana (King & Pantl.) Kraenzl. Orch. Gen. et Spec. 1:611, 1898; Hara, 448, 1966. *Habenaria bakeriana* King & Pantl. in Jour. Asiat. Soc. Beng. 65:132, 1895 et Ann. Roy. Bot. Gard. Calc. 314, t. 413, 1898; Hara, 189, 1971.

Spike 10-15 cm long, laxly flowered; sepals oblong-lanceolate, dorsal sepal conniving with the petals forming a hood, lateral sepals reflexed, petals as long as the sepals, broadly ovate, oblique, subacute, base broad. Lip fleshy, oblong, blunt, slightly broader towards the base, entire, equalling the lateral sepals, spur long, slender, twice as long as the ovary, curved forwards. Collected from Phulchowki.

P. susannae (Linn.) Lindl. Gen. et Spec. Orch. 295, 1835; Sant. in Rec. Bot. Surv. Ind. 16(1): 305, 1953, Sant. & Kapad. in Journ. Bomb. nat. Hist. Soc. 57(1): 125, 1960. *Orchis susannae* Linn. Sp. Pl. 939, 1753. *Habenaria susannae* (Linn.) R. Br. ex Spreng, Syst. Veg. 3:622, 1826; F.B.I. 6:137, 1890; Holttum, 81, f. 13, 1955.

Flowers few and large, c. 7.5-10 cm in diam., white, fragrant, sepals spreading, lateral sepals 3.6 by 2.4 cm, oblong, subquadrately ascending, obtuse, edges reflexed, dorsal sepal broad, rhomboid, spreading, petals small, linear, 1.5 cm long, acute. Lip not longer than the sepals, 3 lobed near to the base, sidelobes truncate, pectinate, midlobe 3 cm long linear or dilated downwards, spur twice as long as the ovary, 10-12 cm long. Flowering during August and September. Collected from Markhu, at c. 1525 m.

Satyrium Sw.

Terrestrial leafy erect orchids with the root system consisting of several ovoid or globular tubers with numerous fleshy roots. When the large tubers perish after producing the flowering stem, the smaller tubers gradually increase in size, and later produce flowering stems. Because of the presumed aphrodisiacal properties possessed by the tubers the plants are much sought after and possibly it is for this reason that plants of *Satyrium nepalensis* are rather rare in the surroundings of Kathmandu valley.

Satyrium nepalensis D. Don, Prodr. Fl. Nep. 26, 1825; F.B.I. 6:168, 1890; King & Pantl. 338, t. 444, 1898; Kitamura, 104, 1955.

Flowering stem even up to 60 cm long, flowers crowded, c. 8-16 mm in diam., from dark pink to white, fragrant, sepals linear oblong, obtuse, spreading and recurved, petals rather narrower than the sepals. Lip broadly oblong, concave, strongly keeled on the back, spurs two, longer than the sepals and as long as the ovary. Flowering during September and October. Collected from Chandragiri, Chaubas to Risingo, Nayapati to Risingo, Rolkhani to Tamchee, Kokwa (Kitamura), Bangukhola (Kitamura). Distributed between 2250 to 3500 m.

var. **ciliata** King & Pantl. 339, 1898. *S. ciliatum* Lindl. Gen. et Spec. Orch. 340, 1835.

Spur hardly longer than the sepals. Collected from Tarebhir to Nagi, Borlong forest at 1980 m.

forma **albiflora** has been described by Tuyama in Hara's Fl. Eastern Himal., but we are of the opinion that there is a great variation of colour, thus a *forma* on colour is not proper. However, plants with light pink flowers which were collected from Godavari Botanic Garden, Kathmandu, were grown in the Indian Co-operation Mission, Kathmandu garden and during the following year the flowers that appeared had a deeper colour. King & Pantl. (loc. cit.) have also mentioned that occasionally flowers are pure white.

(to be continued)